

## SEQUENCE LISTING

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15                  <212> DNA

20                  <213> Homo sapiens

25                  <220>

30                  <221> CDS

35                  <222> (1)...(2136)

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45                  atg gcg gag cga gag agc ggc ggc ctg gga ggg ggg gcc gcg tcc ccg      48

50                  Met Ala Glu Arg Glu Ser Gly Gly Leu Gly Gly Ala Ala Ser Pro

55                  1                5                10                15

60                  ccc gcc gcc tcc ccg ttc ctg ggg ctg cac atc gct tcg cct ccc aat      96

65                  Pro Ala Ala Ser Pro Phe Leu Gly Leu His Ile Ala Ser Pro Pro Asn

70                  20                25                30

75                  ttc agg ctc acc cat gac atc agc ctg gag gag ttt gag gat gaa gac      144

80                  Phe Arg Leu Thr His Asp Ile Ser Leu Glu Glu Phe Glu Asp Glu Asp

85                  35                40                45

90                  ctc tcg gag atc act gat gag tgt ggc atc agc tta cag tgc aaa gac      192

95                  Leu Ser Glu Ile Thr Asp Glu Cys Gly Ile Ser Leu Gln Cys Lys Asp

100                50                55                60

105                acc ctg tcc tta cgg ccc ccg cgc gcc ggg ctg ctc tct gcg ggc ggc      240

110                Thr Leu Ser Leu Arg Pro Pro Arg Ala Gly Leu Leu Ser Ala Gly Gly

65            70            75            80

ggc ggc gcg ggg agc cgg ttg cag gcc gag atg ctg cag atg gac ctg    288  
 Gly Gly Ala Gly Ser Arg Leu Gln Ala Glu Met Leu Gln Met Asp Leu

5            85            90            95

atc gac gcg acg ggg gac act ccc ggg gcc gag gac gac gag gag gac    336  
 Ile Asp Ala Thr Gly Asp Thr Pro Gly Ala Glu Asp Asp Glu Glu Asp

100            105            110

10

gac gac gag gag cgc gcg gcc cgg cgg ccg gga gcg ggg ccg ccc aag    384  
 Asp Asp Glu Glu Arg Ala Ala Arg Arg Pro Gly Ala Gly Pro Pro Lys

115            120            125

15            5            15  
 gcc gaa tcc ggc cag gag ccg gcg tcc cgc ggc cag ggc cag agc caa    432  
 Ala Glu Ser Gly Gln Glu Pro Ala Ser Arg Gly Gln Gly Gln Ser Gln

130            135            140

20

ggc cag agc cag ggc ccg ggc agc ggg gac acg tac cgg ccc aag cgg    480  
 Gly Gln Ser Gln Gly Pro Gly Ser Gly Asp Thr Tyr Arg Pro Lys Arg

145            150            155            160

25

ccc acc acg ctc aac ctc ttt ccg cag gtg ccg ccg tct cag gac aca    528  
 Pro Thr Thr Leu Asn Leu Phe Pro Gln Val Pro Arg Ser Gln Asp Thr

165            170            175

30

ctg aat aat aat tct ctg ggc aaa aag cac agt tgg cag gat cgg gtg    576  
 Leu Asn Asn Asn Ser Leu Gly Lys Lys His Ser Trp Gln Asp Arg Val

180            185            190

tct cga tca tcc tca ccc ctg aag aca ggg gag cag aca cca ccg cat 624  
 Ser Arg Ser Ser Pro Leu Lys Thr Gly Glu Gln Thr Pro Pro His  
 195 200 205

5 gaa cac atc tgc ctg agc gag gag ctg ccc ccc cag agc ggc ccc gcc 672  
 Glu His Ile Cys Leu Ser Glu Glu Leu Pro Pro Gln Ser Gly Pro Ala  
 210 215 220

ccc acc aca gat cga ggc acc tcc acc gac agc cct tgc cgc cgc agc 720  
 Pro Thr Thr Asp Arg Gly Thr Ser Thr Asp Ser Pro Cys Arg Arg Ser  
 10 225 230 235 240

aca gcc acc cag atg gca cct ccg ggt ccc cct gct gcc ccg cct 768  
 Thr Ala Thr Gln Met Ala Pro Pro Gly Gly Pro Pro Ala Ala Pro Pro  
 15 245 250 255

ggg ggt cgg ggc cac tcg cat cga gac cga atc cac tac cag gcc gat 816  
 Gly Gly Arg Gly His Ser His Arg Asp Arg Ile His Tyr Gln Ala Asp  
 20 260 265 270

gtg cga cta gag gcc act gag gag atc tac ctg acc cca gtg cag agg 864  
 Val Arg Leu Glu Ala Thr Glu Glu Ile Tyr Leu Thr Pro Val Gln Arg  
 275 280 285

25 ccc cca gac gct gca gag ccc acc tcc gcc ttc ctg ccg ccc act gag 912  
 Pro Pro Asp Ala Ala Glu Pro Thr Ser Ala Phe Leu Pro Pro Thr Glu  
 290 295 300

agc cgg atg tca gtc agc tcc gat cca gac cct gcc gcc tac ccc tcc 960  
 Ser Arg Met Ser Val Ser Ser Asp Pro Asp Pro Ala Ala Tyr Pro Ser  
 30

305            310            315            320

acg gca ggg cgg ccg cac ccc tcc atc agt gaa gag gaa gag ggc ttc    1008  
 Thr Ala Gly Arg Pro His Pro Ser Ile Ser Glu Glu Glu Gly Phe

5                325            330            335

gac tgc ctg tcg tcc cca gag cgg gct gag ccc cca ggc gga ggg tgg    1056  
 Asp Cys Leu Ser Ser Pro Glu Arg Ala Glu Pro Pro Gly Gly Trp

340            345            350

10              355            360            365

cgg ggg agc ctg ggg gag ccg ccg cca cct cca cgg gcc tct ctg agc    1104  
 Arg Gly Ser Leu Gly Glu Pro Pro Pro Pro Arg Ala Ser Leu Ser

370            375            380

15              385            390            395            400

tcg gac acc agc gcc ctg tcc tat gac tct gtc aag tac acg ctg gtg    1152  
 Ser Asp Thr Ser Ala Leu Ser Tyr Asp Ser Val Lys Tyr Thr Leu Val

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gta gat gag cat gca cag ctg gag ctg gtg agc ctg cgg ccg tgc ttc    1200  
 Val Asp Glu His Ala Gln Leu Glu Leu Val Ser Leu Arg Pro Cys Phe

405            410            415

25              420            425            430

gga gac tac agt gac gag agt gac tct gcc acc gtc tat gac aac tgt    1248  
 Gly Asp Tyr Ser Asp Glu Ser Asp Ser Ala Thr Val Tyr Asp Asn Cys

30              430

gcc tcc gtc tcc tcg ccc tat gag tcg gcc atc gga gag gaa tat gag    1296  
 Ala Ser Val Ser Ser Pro Tyr Glu Ser Ala Ile Gly Glu Glu Tyr Glu

5

gag gcc ccg cgg ccc cag ccc cct gcc tgc ctc tcc gag gac tcc acg 1344

Glu Ala Pro Arg Pro Gln Pro Pro Ala Cys Leu Ser Glu Asp Ser Thr

435 440 445

cct gat gaa ccc gac gtc cat ttc tcc aag aaa ttc ctg aac gtc ttc 1392

Pro Asp Glu Pro Asp Val His Phe Ser Lys Lys Phe Leu Asn Val Phe

450 455 460

atg agt ggc cgc tcc cgc tcc tcc agt gct gag tcc ttc ggg ctg ttc 1440

10 Met Ser Gly Arg Ser Arg Ser Ser Ala Glu Ser Phe Gly Leu Phe

465 470 475 480

tcc tgc atc atc aac ggg gag gag cag gag acc cac cgg gcc ata 1488

Ser Cys Ile Ile Asn Gly Glu Glu Gln Gln Thr His Arg Ala Ile

485 490 495

ttc agg ttt gtg cct cga cac gaa gac gaa ctt gag ctg gaa gtg gat 1536

Phe Arg Phe Val Pro Arg His Glu Asp Glu Leu Glu Leu Glu Val Asp

500 505 510

20

gac cct ctg cta gtg gag ctc cag gct gaa gac tac tgg tac gag gcc 1584

Asp Pro Leu Leu Val Glu Leu Gln Ala Glu Asp Tyr Trp Tyr Glu Ala

515 520 525

25

tac aac atg cgc act ggt gcc cgg ggt gtc ttt cct gcc tat tac gcc 1632

Tyr Asn Met Arg Thr Gly Ala Arg Gly Val Phe Pro Ala Tyr Tyr Ala

530 535 540

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atc gag gtc acc aag gag ccc gag cac atg gca gcc ctg gcc aaa aac 1680

Ile Glu Val Thr Lys Glu Pro Glu His Met Ala Ala Leu Ala Lys Asn

545            550            555            560

agt gac tgg gtg gac cag ttc cgg gtg aag ttc ctg ggc tca gtc cag    1728  
 Ser Asp Trp Val Asp Gln Phe Arg Val Lys Phe Leu Gly Ser Val Gln

5                565            570            575

gtt ccc tat cac aag ggc aat gac gtc ctc tgt gct gct atg caa aag    1776  
 Val Pro Tyr His Lys Gly Asn Asp Val Leu Cys Ala Ala Met Gln Lys

10              580            585            590

att gcc acc acc cgc cgg ctc acc gtg cac ttt aac ccg ccc tcc agc    1824  
 Ile Ala Thr Thr Arg Arg Leu Thr Val His Phe Asn Pro Pro Ser Ser

15              595            600            605

tgt gtc ctg gag atc agc gtg cgg ggt gtg aag ata ggc gtc aag gcc    1872  
 Cys Val Leu Glu Ile Ser Val Arg Gly Val Lys Ile Gly Val Lys Ala

20              610            615            620

gat gac tcc cag gag gcc aag ggg aat aaa tgt agc cac ttt ttc cag    1920  
 Asp Asp Ser Gln Glu Ala Lys Gly Asn Lys Cys Ser His Phe Phe Gln

25              625            630            635            640

tta aaa aac atc tct ttc tgc gga tat cat cca aag aac aac aag tac    1968  
 Leu Lys Asn Ile Ser Phe Cys Gly Tyr His Pro Lys Asn Asn Lys Tyr

30              645            650            655

ttt ggg ttc atc acc aag cac ccc gcc gac cac cgg ttt gcc tgc cac    2016  
 Phe Gly Phe Ile Thr Lys His Pro Ala Asp His Arg Phe Ala Cys His

660            665            670

gtc ttt gtg tct gaa gac tcc acc aaa gcc ctg gca gag tcc gtg ggg 2064  
 Val Phe Val Ser Glu Asp Ser Thr Lys Ala Leu Ala Glu Ser Val Gly  
 675                680                685

5                    aga gca ttc cag cag ttc tac aag cag ttt gtg gag tac acc tgc ccc 2112  
 Arg Ala Phe Gln Gln Phe Tyr Lys Gln Phe Val Glu Tyr Thr Cys Pro  
 690                695                700

aca gaa gat atc tac ctg gag tag ctgtgcagcc ccgcctctg cgtccccag 2166  
 10                  Thr Glu Asp Ile Tyr Leu Glu \*

705                710

ccctcaggcc agtgcagga cagctggctg ctgacaggat gtggcactgc ttgaggaggg 2226  
 gcacctgccca ccgcagagg acaaggaagt gggggccgct ggcccagggt agggagggt 2286  
 gggcaatgg ggagaggcaa atgcagttta ttgtaatata tggattaga ttcatctatg 2346  
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 cagagaagga tgcgttcc aggacacac ggccctgcc catcctggc cttacccccc 2466  
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 20                  caggctgagc ccagccacct cccaaggact ttccagtagg aaatggcaac aggtgaagtc 2646  
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 <213> Homo sapiens

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&lt;400&gt; 2

Met Ala Glu Arg Glu Ser Gly Gly Leu Gly Gly Ala Ala Ser Pro  
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 Pro Ala Ala Ser Pro Phe Leu Gly Leu His Ile Ala Ser Pro Pro Asn  
 5            20            25            30  
 Phe Arg Leu Thr His Asp Ile Ser Leu Glu Glu Phe Asp Glu Asp  
 35            40            45  
 Leu Ser Glu Ile Thr Asp Glu Cys Gly Ile Ser Leu Gln Cys Lys Asp  
 50            55            60  
 10            Thr Leu Ser Leu Arg Pro Pro Arg Ala Gly Leu Leu Ser Ala Gly Gly  
 65            70            75            80  
 Gly Gly Ala Gly Ser Arg Leu Gln Ala Glu Met Leu Gln Met Asp Leu  
 85            90            95  
 Ile Asp Ala Thr Gly Asp Thr Pro Gly Ala Glu Asp Asp Glu Glu Asp  
 100            105            110  
 Asp Asp Glu Glu Arg Ala Ala Arg Arg Pro Gly Ala Gly Pro Pro Lys  
 115            120            125  
 Ala Glu Ser Gly Gln Glu Pro Ala Ser Arg Gly Gln Gly Gln Ser Gln  
 130            135            140  
 Gly Gln Ser Gln Gly Pro Gly Ser Gly Asp Thr Tyr Arg Pro Lys Arg  
 145            150            155            160  
 Pro Thr Thr Leu Asn Leu Phe Pro Gln Val Pro Arg Ser Gln Asp Thr  
 165            170            175  
 Leu Asn Asn Asn Ser Leu Gly Lys Lys His Ser Trp Gln Asp Arg Val  
 180            185            190  
 25            Ser Arg Ser Ser Pro Leu Lys Thr Gly Glu Gln Thr Pro Pro His  
 195            200            205  
 Glu His Ile Cys Leu Ser Glu Glu Leu Pro Pro Gln Ser Gly Pro Ala  
 210            215            220  
 Pro Thr Thr Asp Arg Gly Thr Ser Thr Asp Ser Pro Cys Arg Arg Ser  
 30

225            230            235            240  
 Thr Ala Thr Gln Met Ala Pro Pro Gly Gly Pro Pro Ala Ala Pro Pro  
 245            250            255  
 Gly Gly Arg Gly His Ser His Arg Asp Arg Ile His Tyr Gln Ala Asp  
 5                260            265            270  
 Val Arg Leu Glu Ala Thr Glu Glu Ile Tyr Leu Thr Pro Val Gln Arg  
 275            280            285  
 Pro Pro Asp Ala Ala Glu Pro Thr Ser Ala Phe Leu Pro Pro Thr Glu  
 290            295            300  
 Ser Arg Met Ser Val Ser Ser Asp Pro Asp Pro Ala Ala Tyr Pro Ser  
 305            310            315            320  
 Thr Ala Gly Arg Pro His Pro Ser Ile Ser Glu Glu Glu Gly Phe  
 325            330            335  
 Asp Cys Leu Ser Ser Pro Glu Arg Ala Glu Pro Pro Gly Gly Trp  
 340            345            350  
 Arg Gly Ser Leu Gly Glu Pro Pro Pro Pro Arg Ala Ser Leu Ser  
 355            360            365  
 Ser Asp Thr Ser Ala Leu Ser Tyr Asp Ser Val Lys Tyr Thr Leu Val  
 370            375            380  
 Val Asp Glu His Ala Gln Leu Glu Leu Val Ser Leu Arg Pro Cys Phe  
 385            390            395            400  
 Gly Asp Tyr Ser Asp Glu Ser Asp Ser Ala Thr Val Tyr Asp Asn Cys  
 405            410            415  
 Ala Ser Val Ser Ser Pro Tyr Glu Ser Ala Ile Gly Glu Glu Tyr Glu  
 420            425            430  
 Glu Ala Pro Arg Pro Gln Pro Pro Ala Cys Leu Ser Glu Asp Ser Thr  
 435            440            445  
 Pro Asp Glu Pro Asp Val His Phe Ser Lys Lys Phe Leu Asn Val Phe  
 450            455            460  
 30              Met Ser Gly Arg Ser Arg Ser Ser Ala Glu Ser Phe Gly Leu Phe

465            470            475            480  
 Ser Cys Ile Ile Asn Gly Glu Glu Gln Thr His Arg Ala Ile  
 485            490            495  
 Phe Arg Phe Val Pro Arg His Glu Asp Glu Leu Glu Leu Glu Val Asp  
 5                500            505            510  
 Asp Pro Leu Leu Val Glu Leu Gln Ala Glu Asp Tyr Trp Tyr Glu Ala  
 515            520            525  
 Tyr Asn Met Arg Thr Gly Ala Arg Gly Val Phe Pro Ala Tyr Tyr Ala  
 530            535            540  
 Ile Glu Val Thr Lys Glu Pro Glu His Met Ala Ala Leu Ala Lys Asn  
 545            550            555            560  
 Ser Asp Trp Val Asp Gln Phe Arg Val Lys Phe Leu Gly Ser Val Gln  
 565            570            575  
 Val Pro Tyr His Lys Gly Asn Asp Val Leu Cys Ala Ala Met Gln Lys  
 580            585            590  
 Ile Ala Thr Thr Arg Arg Leu Thr Val His Phe Asn Pro Pro Ser Ser  
 595            600            605  
 Cys Val Leu Glu Ile Ser Val Arg Gly Val Lys Ile Gly Val Lys Ala  
 610            615            620  
 Asp Asp Ser Gln Glu Ala Lys Gly Asn Lys Cys Ser His Phe Phe Gln  
 625            630            635            640  
 Leu Lys Asn Ile Ser Phe Cys Gly Tyr His Pro Lys Asn Asn Lys Tyr  
 645            650            655  
 Phe Gly Phe Ile Thr Lys His Pro Ala Asp His Arg Phe Ala Cys His  
 660            665            670  
 Val Phe Val Ser Glu Asp Ser Thr Lys Ala Leu Ala Glu Ser Val Gly  
 675            680            685  
 Arg Ala Phe Gln Gln Phe Tyr Lys Gln Phe Val Glu Tyr Thr Cys Pro  
 690            695            700  
 30              Thr Glu Asp Ile Tyr Leu Glu

705            710

<210> 3

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<213> Homo sapiens

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Gly Val Lys Ile Gly Val Lys Ala Asp Asp Ser Gln Glu Ala Lys Gly

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Asn Lys Cys